

REMARKS

Claims 1-15 currently appear in this application. The Office Action of August 8, 2007, has been carefully studied. These claims define novel and unobvious subject matter under Sections 102 and 103 of 35 U.S.C., and therefore should be allowed. Applicant respectfully requests favorable reconsideration, entry of the present amendment, and formal allowance of the claims.

Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kato et al., US 3,912,591. The Examiner's position is that the difference between applicant's composition and the Kato composition is that Kato does not determine the bacterial count of the composition (the liquid) and the %(w/w) of the pullulan in the composition. The Examiner further states that it would have been obvious to one having ordinary skill in the art, at the time the claimed invention was made, to have prepared the pullulan composition of Kato and to determine the bacterial count and specific %(w/w) of the pullulan in the composition to produce purified products of low viscosity such as maltotriose, depending on need and availability. This rejection is respectfully traversed.

As mentioned in the "Background Art" of the present specification, at the time the presently claimed invention was

made, all pullulan products that were obtainable by conventional methods were in the form of a powder or film, that is, solid. There were no pullulan products in liquid form available in the market at the time the claimed invention was made, and it had been assumed that it would be difficult to transport pullulan products in liquid form.

In this regard, it is clear that Kato's invention was made to provide pullulan products not in liquid form, but in solid form. Although Kato discloses pullulan in liquid form, what Kato discloses is a method for producing pullulan from a source of carbon and nitrogen in a liquid medium. This is not a final product, but is merely an intermediate product which can be obtained in the course of producing the pullulan products. However, the final product, at the time Kato was filed (1973), was a solid. Therefore, neither the bacterial count nor the pullulan concentration is determined in Kato. In other words, it was not necessary to Kato to determine either the bacterial cont or the final pullulan concentration in the liquid because the pullulan in the culture medium is not the final product but merely an intermediate product. In view of this, it is respectfully submitted that there would have been no motivation in Kato to determine either the bacterial count or pullulan concentration in the solution.

In contrast to Kato, it is indispensable in the herein claimed invention to control both the bacterial count and the pullulan concentration in the liquid, because pullulan in a liquid is the final product of the claimed invention.

The concentration of a temporarily obtainable liquid pullulan in Kato can be estimated from the following recitations in Kato:

"The yield of pullulan based on the sugar employed as a carbon source also varies from 20-75% depending on culture conditions." (column 2, lines 16-18, emphasis added).

"However... while the yield of pullulan based on the initial sugar was 30%..." (column 2, lines 39-41).

From the above, the concentration of liquid pullulan that is temporarily obtainable in the course of producing solid pullulan products is about $30\% \times (20\% \text{ to } 30\%) \times 75\% = 6\% \text{ to } 22.5\%$.

Kato further states in Example 1 at column 3, line 54 to column 4, line 60, as follows:

"The culture medium contained 10 g/dl d.s.b. starch syrup..." (column 3, lines 57-58)

From this, it is estimated that the amount of pullulan produced in the culture medium is $10 \text{ g/dl} \times 20\% \text{ to } 10 \text{ g/dl} \times 75\% = 1 \text{ g/dl to } 7.5 \text{ g/dl}$ when all of the starch syrup contained in the culture medium is the source for the

pullulan. Therefore, the concentration of pullulan in the culture medium is estimated to be about 2 to 7.5% (w/w).

Similarly, Kato states in Example 6 at column 6, line 34 to column 7, line 7,

"A culture medium contained 10 g/dl d.s.b. date extract..." (column 6, lines 50-51)

Since the sugar content of dates is 50% (please see column 2, line 55 of Kato). The starch concentration in the culture medium is 5 g/dl (= 10 g/dl x 50%). Therefore, it is estimated that the amount of pullulan produced in the culture medium is 5 g/dl x (20% to 75%) = 1 to 3.75 % (w/w).

In view of the above, it can be seen that the pullulan concentration in the solution obtained in the course of producing solid pullulan products in Kato is at most 22.5% (w/w).

In contrast thereto, as recited in claim 1 as amended, the concentration of pullulan in the liquid pullulan as claimed herein is 25% (w/w) or more. Support for this amendment can be found in the specification as filed at page 7, lines 15-17. It is clear that the herein claimed higher pullulan content of the liquid is distinct from the solution of pullulan that is temporarily obtained in the course of producing the solid products of Kato.

Kato teaches nothing about the requirement for controlling the bacterial count and pullulan concentration in the specified range so that the liquid containing this high concentration of pullulan is preserved and can be transported stably.

Furthermore, Kato discloses nothing about the great advantages of the liquid having a high pullulan concentration as claimed here, because this liquid retains its desired qualities immediately after its processing for a relatively long period of time, and the liquid has a satisfactory handleability and is economical to transport, as described in the "POSSIBILITY OF INDUSTRIAL APPLICABILITY" in the specification.

In view of the above, it is respectfully submitted that the claims are now in condition for allowance, and favorable action thereon is earnestly solicited.

Respectfully submitted,

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